

case study

South Africa
BHP Billiton
Middelburg Colliery

For BHP Billiton, the safety and health of its people is core to every aspect of its business. Having people return home safe and well at the end of every working day is central to everything it does.

The approach to risk management by the senior leadership at Middelburg Colliery, a BHP Billiton Energy Coal South Africa owned colliery, has dramatically improved safety performance.

Middelburg Colliery has significantly improved on all safety indicators and has not sustained a fatality for the past five years.

The risk management system in place at the site is rigorous, and each senior leadership team member takes personal ownership for implementing and embedding the system.

The idea is simple: the managers accountable for risks with the potential to cause fatalities should also be directly responsible for managing those risks.

That way, risks that affect the people at the coalface aren't managed at some distant, strategic level, and the responsibility of ensuring a safe working environment does

not just reside with the on-site safety personnel.

Middelburg's senior leadership team are thoroughly trained in safety management and, more importantly, they're close enough to their site and personnel to recognise and understand, in practical terms, the risks and scenarios they are working to prevent.

Register of risk

Risk management begins with the compilation of a baseline risk register: a list of everything that could possibly go wrong on site, from the less serious risk of someone tripping as a result of poor housekeeping to a more serious risk of an uncontrolled blast.

Every risk in the register needs to be managed. But the Middelburg team's top priority is preventing "material risk events": the five biggest risks in the register, in terms



Cliff Hulley, Manager Production, performing a critical control verification on a blasting crew

of how likely they are to occur and cause multiple fatalities.

Middelburg's five material risk events are: a fall from height; a vehicle accident; an opencast strata failure; the uncontrolled release of mine-affected water; and an uncontrolled detonation of explosives.

Managing these risks involves imagining all the factors that could conceivably cause each event, devising effective controls for every one, and inspecting the site regularly to make sure the controls have been appropriately implemented and are operating as designed.

But, being pragmatists, the team also has to plan for the worst case scenario, listing all the possible outcomes that may arise from each material risk event and devising controls to limit those outcomes.

For instance, the possible causes of an uncontrolled detonation include a lightning strike, while the potential outcomes include multiple fatalities and property damage.



"It's all about accountable line people spending quality time in the field and coaching and mentoring while doing verifications and checking for compliance"

Derek Rex
Manager HSEC, Middelburg Colliery

The list of prevention and mitigation controls for each material risk event will include a number of “critical controls”. These are the controls that should be maintained at all times to safeguard against such a risk event.

Observation and conversation

The line manager accountable for each material risk event is responsible for carrying out the relevant site inspections. Each manager performs one “critical task observation” per week, and two “critical control verifications” per month.

Each inspection takes two to three hours, but these can be carried out alongside other duties. Line managers at Middelburg Colliery are expected to spend between 12 and 15 hours per week at the coalface anyway, so it isn't difficult to make time.

This is an important point. The team recognises that if risk management duties are too onerous, people can't or won't carry them out to the necessary standard. And standards can't be allowed to slip when it comes to material risk events.

Inspections involve observing the environment, equipment and working methods. But constructive conversations with the people at the coalface are just as important.

One aim of inspecting the site is to make sure all the agreed prevention and mitigation controls are still in place. But spotting when circumstances have changed, making existing controls redundant or creating a need for new ones, is also crucial.

Combining observation with conversation is the best way for the team to ensure they're capturing the complete picture. And the format and frequency of inspections helps build trust and embed good practice with on-site personnel.

That familiarity grows with each of the inspection routine. On-site personnel recognise that inspections are part of a continuous improvement process that benefits everyone.

Continuous improvement

The results of each inspection are logged, and the data analysed to see whether any controls need to be strengthened

or altered. Every six months, the team reviews the Bowtie Diagrams against all the data they've collected about their effectiveness, and revises them if necessary. A Bowtie Diagram is a visual risk assessment tool that is used to define the risk event, state causes and impacts as well as identify controls (both preventative and mitigating) in order to manage the risk appropriately.

Meanwhile, through repetition and regular discussion, compliance becomes second nature to on-site personnel.

And so Middelburg Colliery continues its focus on the identification, management and prevention of risks to ensure the appropriate controls are in place for the safety of all personnel. Other sites within BHP Billiton Energy Coal South Africa (BECSA) are already following Middelburg's lead. The next step is to embed the scheduling and reporting of in-field inspections and verifications into 1SAP to effectively manage the process. In the end success depends on the personal dedication of leaders and the way that they interact with the workforce.



Alex Cronje, General Manager, discussing the material risk Bowtie Diagrams and critical controls with the Manager Production and the Manager Maintenance

Find out more

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To find out more about the World Coal Association and our work, visit www.worldcoal.org or email info@worldcoal.org

5.5

Number of years since the last fatality as a result of a rigorous risk management system, by which managers accountable for risks with the potential to cause fatalities are also directly responsible for managing those risks.

Number of Critical Task Observations performed at Middelburg mine



288

FY13 Target



331

FY13 Total

115%

Critical Task Observation (CTO) target reached so far this year, based on each manager carrying out one CTO per week.